

**WHAT IS CLAIMED IS:**

- 1        1.        A method, comprising:
  - 2                    (1) determining a set of present components assigned to a domain, each of
  - 3                    the set of present components includes a set of modules;
  - 4                    (2) determining a set of symbols imported by the set of modules assigned
  - 5                    to the domain;
  - 6                    (3) determining zero or more needed components to which the domain
  - 7                    does not have access and at least one of provides the set of symbols imported by the set
  - 8                    of modules, and specified as required by the set of present components; and
  - 9                    (4) adding the zero or more needed components into the domain.
- 1        2.        The method of claim 1, wherein determining the zero or more needed components
  - 2                    includes determining zero or more non-resident needed components which are the zero or
  - 3                    more needed components that cannot reside in the domain, as specified by a user of a
  - 4                    configuration tool, and determining zero or more resident needed components which are
  - 5                    the zero or more needed components that can reside in the domain, as specified by the
  - 6                    user.
- 1        3.        The method of claim 1, wherein the domain has access only to the set of present
  - 2                    components assigned to the domain.
- 1        4.        The method of claim 2, wherein adding the zero or more needed components into

2 the domain includes displaying the zero or more resident needed components to a user of  
3 a project facility and allowing the user to add the zero or more needed components into  
4 the domain.

1 5. The method of claim 2, further comprising displaying the zero or more non-  
2 resident needed components to a user of a project facility.

1 6. The method of claim 2, wherein the domain is part of a set of domains and a  
2 domain link path connects the set of domains between a highest hierarchical level of the  
3 domain link path and a lowest hierarchical level.

1 7. The method of claim 6, wherein a kernel domain is at the lowest hierarchical level  
2 of the domain link path and application domains are at the highest hierarchical level of  
3 the domain link path.

1 8. The method of claim 7, wherein the particular one of the set of domains does not  
2 have access to a set of components not assigned to the particular one of the set of  
3 domains, and that provides the set of symbols imported by the set of modules but the  
4 particular one of the set of domains is not given entry points to those symbols by the set  
5 of domains at lower hierarchical levels in the domain link path, and that are not in at least  
6 one of the zero or more resident needed components, and the zero or more non-resident  
7 needed components of any one of the set of domains at lower hierarchical levels in the  
8 domain link path, if such levels exist.

1        9.        The method of claim 8, wherein for each of the set of domains in the domain link  
2        path, starting at the lowest hierarchical level of the domain link path and traversing to the  
3        highest hierarchical level, performing steps (1) to (3) of claim 1 for each of the set of  
4        domains.

1        10.        The method of claim 9, further comprising, for each of the set of domains in the  
2        domain link path and starting at the highest hierarchical level of that domain link path  
3        and traversing to the lowest hierarchical level,

4                determining the set of symbols imported by the zero or more resident needed  
5        components of that domain and determining zero or more second pass needed  
6        components that at least one of provides the set of symbols imported by the zero or more  
7        resident needed components and to which this domain does not have access, and  
8        specified by the component description file as required by the zero or more resident  
9        needed components;

10               inserting the zero or more second pass needed components that can reside in this  
11        domain into the zero or more resident needed components for that domain, and

12               for each of the zero or more second pass needed components that cannot reside in  
13        this domain, traversing down the domain link path to the lowest hierarchical level until  
14        the particular one of the zero or more second pass needed components can reside in a  
15        particular one of the set of domains in the domain link path and then inserting the  
16        particular one of the zero or more second pass needed components into the particular one  
17        of the set of domains, otherwise, if the particular one of the zero or more second pass

18 needed components cannot reside in any of the domains of the domain link path, then  
 19 inserting the particular one of the zero or more second pass needed components into zero  
 20 or more error components.

1 11. The method of claim 10, wherein adding the zero or more needed components  
 2 includes displaying the zero or more resident needed components of a particular one of  
 3 the set of domains to a user of a project facility and allowing the user to add the zero or  
 4 more resident needed components into that domain.

1 12. The method of claim 10, further comprising, displaying the zero or more non-  
 2 resident needed components of a particular one of the set of domains to a user of a project  
 3 facility.

1 13. A system, comprising:  
 2 a first parser that lists a set of symbols and a set of modules that imports or  
 3 exports the set of symbols;  
 4 a second parser that maps the set of modules to a set of components and  
 5 specifies dependencies among the set of components; and  
 6 a project analysis utility that  
 7 (1) determines a set of present components assigned to a domain,  
 8 each of the set of present components includes a subset of the set of modules;  
 9 (2) determines a subset of the set of symbols imported by the  
 10 subset of modules assigned to the domain;

- 11 (3) determines zero or more needed components to which the  
12 domain does not have access and at least one of provides the subset of symbols imported  
13 by the subset of modules, and specified in the mapping by the second parser as required  
14 by the set of present components; and  
15 (4) adds the zero or more needed components into the domain.

1 14. The system of claim 13, further comprising a configuration tool, coupled  
2 to the project analysis utility, at least one of creates the domain, assigns the set of present  
3 components to the domain, and specifies whether a particular one of the set of  
4 components may reside in the domain.

1 15. The system of claim 13, wherein the project analysis utility determines zero or  
2 more non-resident needed components which are the zero or more needed components  
3 that cannot reside in the domain, as specified by a user of the configuration tool, and  
4 determines zero or more resident needed components which are the zero or more needed  
5 components that can reside in the domain, as specified by the user.

1 16. The system of claim 15, wherein the domain has access only to the set of  
2 present components assigned to the domain.

1 17. The system of claim 15, wherein the project analysis utility displays the zero or  
2 more resident needed components to a user of a project facility using a graphics user  
3 interface and allows the user to add the zero or more needed components into the domain.

1 18. The system of claim 15, wherein the project analysis utility displays the zero or  
2 more non-resident needed components to a user of a project facility using a graphics user  
3 interface.

1 19. The system of claim 15, wherein the domain is part of a set of domains and a  
2 domain link path connects the set of domains between a highest hierarchical level of the  
3 domain link path and a lowest hierarchical level.

1 20. The system of claim 19, wherein a kernel domain is at the lowest hierarchical  
2 level of the domain link path and application domains are at the highest hierarchical level  
3 of the domain link path.

1 21. The system of claim 20, wherein the particular one of the set of domains does not  
2 have access to a set of components not assigned to the particular one of the set of  
3 domains, and that provides the set of symbols imported by the set of modules but the  
4 particular one of the set of domains is not given entry points to those symbols by the set  
5 of domains at lower hierarchical levels in the domain link path, and that are not in at least  
6 one of the zero or more resident needed components, and the zero or more non-resident  
7 needed components of any one of the set of domains at lower hierarchical levels in the  
8 domain link path, if such levels exist.

1 22. The system of claim 21, wherein the project analysis utility, for each of the set of

2 domains in the domain link path, starting at the lowest hierarchical level of the domain  
3 link path and traversing to the highest hierarchical level, performs (1) to (3) of claim 13  
4 for each of the set of domains.

1 23. The system of claim 22, wherein the project analysis utility, for each of the set of  
2 domains in the domain link path and starting at the highest hierarchical level of that  
3 domain link path and traversing to the lowest hierarchical level,

4 determines the set of symbols imported by the zero or more resident needed  
5 components of that domain and determines zero or more second pass needed components  
6 that at least one of provides the set of symbols imported by the zero or more resident  
7 needed components and to which this domain does not have access, and specified in the  
8 mapping by the second parser as required by the zero or more resident needed  
9 components;

10 inserts the zero or more second pass needed components that can reside in this  
11 domain into the zero or more resident needed components for that domain; and

12 for each of the zero or more second pass needed components that cannot reside in  
13 this domain, traverses down the domain link path to the lowest hierarchical level until the  
14 particular one of the zero or more second pass needed components can reside in a  
15 particular one of the set of domains in the domain link path and then inserts the particular  
16 one of the zero or more second pass needed components into the particular one of the set  
17 of domains, otherwise, if the particular one of the zero or more second pass needed  
18 components cannot reside in any of the domains of the domain link path, then inserts the  
19 particular one of the zero or more second pass needed components into zero or more error

20 components.

1 24. The system of claim 23, wherein the project analysis utility, displays the zero or  
2 more resident needed components of a particular one of the set of domains to a user of a  
3 project facility using a graphics user interface and allows the user to add the zero or more  
4 resident needed components into that domain.

1 25. The system of claim 23, wherein the project analysis utility displays the zero or  
2 more non-resident needed components of a particular one of the set of domains to a user  
3 of a project facility using a graphics user interface.

1 26. A method, comprising:

2 (1) determining a set of present components assigned to a domain;

3 (2) determining zero or more precious components specified by a user of a  
4 configuration tool as not removable from the domain, each of the zero or more precious  
5 components includes a set of modules;

6 (3) determining a set of symbols imported by the set of modules in each of the  
7 zero or more precious components;

8 (4) determining zero or more needed components to which the domain does  
9 not have access and at least one of provides the set of symbols imported by the set of  
10 modules, and specified as required by the zero or more precious components;

11 (5) if one or more of the zero or more needed components is found in the set  
12 of present components, then moving the one or more of the set of present components



13 into the zero or more precious components; and

14 (6) removing the set of present components from the domain.

1 27. The method of claim 26, wherein the domain has access only to the set of present  
2 components assigned to the domain.

1 28. The method of claim 27, wherein removing the set of present components from  
2 the domain includes displaying the set of present components to a user of a project  
3 facility and allowing the user to remove the set of present components from the domain.

1 29. The method of claim 26, wherein the domain is part of a set of domains and a  
2 domain link path connects the set of domains between a highest hierarchical level of the  
3 domain link path and a lowest hierarchical level.

1 30. The method of claim 29, wherein a kernel domain is at the lowest hierarchical  
2 level of the domain link path and application domains are at the highest hierarchical level  
3 of the domain link path.

1 31. The method of claim 30, wherein the particular one of the set of domains does not  
2 have access to a set of components not assigned to the particular one of the set of  
3 domains, and that provides the set of symbols imported by the set of modules but the  
4 particular one of the set of domains is not given entry points to those symbols by the set  
5 of domains at lower hierarchical levels in the domain link path.

1     32.     The method of claim 31, wherein for each of the set of domains in the domain  
 2     link path, starting at the highest hierarchical level of the domain link path and traversing  
 3     to the lowest hierarchical level, performing steps (1) to (5) of claim 28 for each of the set  
 4     of domains.

1     33.     The method of claim 32, wherein moving the one or more of the set of present  
 2     components into the zero or more precious components includes, for each of the zero or  
 3     more needed components of a particular one of the set of domains in the domain link  
 4     path, starting with that domain and traversing down the domain link path toward the  
 5     lowest hierarchical level until the particular one of the zero or more needed components  
 6     is equal to a particular one of the set of present components of one of the set of domains  
 7     in the domain link path and then moving the particular one of the set of present  
 8     components to the zero or more precious components of the particular one of the set of  
 9     domains.

1     34.     The method of claim 33, wherein removing the set of present components from  
 2     the domain includes displaying the set of present components of a particular one of the  
 3     set of domains to a user of a project facility, and allowing the user to remove one or more  
 4     of the set of present components.

1     35.     A system, comprising:  
 2             a first parser that lists a set of symbols and a set of modules that imports or

3 exports the set of symbols;  
 4 a second parser that maps the set of modules to a set of components and  
 5 specifies dependencies among the set of components; and  
 6 a project analysis utility that  
 7 (1) determines a set of present components assigned to a domain;  
 8 (2) determines zero or more precious components specified by a user  
 9 of a configuration tool as not removable from the domain, each of the zero or more  
 10 precious components includes a subset of the set of modules;  
 11 (3) determines a subset of the set of symbols imported by the subset of  
 12 modules;  
 13 (4) determines zero or more needed components to which the domain  
 14 does not have access and at least one of provides the subset of symbols imported by the  
 15 subset of modules, and specified as required by the zero or more precious components;  
 16 (5) if one or more of the zero or more needed components is found in  
 17 the set of present components, then moves the one or more of the set of present  
 18 components into the zero or more precious components; and  
 19 (6) removes the set of present components from the domain.

1 36. The system of claim 35, wherein the configuration tool, coupled to the project  
 2 analysis utility, at least one of creates the domain, assigns the set of present components  
 3 to the domain, and designates the zero or more precious components in the domain.

1 37. The system of claim 35, wherein the domain has access only to the set of

2 present components assigned to the domain.

1 38. The system of claim 37, wherein the project analysis utility displays the set of  
2 present components to a user of a project facility using a graphics user interface and  
3 allows the user to remove the set of present components from the domain.

1 39. The system of claim 38, wherein the domain is part of a set of domains and a  
2 domain link path connects the set of domains between a highest hierarchical level of the  
3 domain link path and a lowest hierarchical level.

1 40. The system of claim 39, wherein a kernel domain is at the lowest hierarchical  
2 level of the domain link path and application domains are at the highest hierarchical level  
3 of the domain link path.

1 41. The system of claim 40, wherein the particular one of the set of domains does not  
2 have access to a set of components not assigned to the particular one of the set of  
3 domains, and that provides the set of symbols imported by the set of modules but the  
4 particular one of the set of domains is not given entry points to those symbols by the set  
5 of domains at lower hierarchical levels in the domain link path.

1 42. The system of claim 41, wherein the project analysis utility, for each of the set of  
2 domains in the domain link path, starting at the highest hierarchical level of the domain  
3 link path and traversing to the lowest hierarchical level, performing (1) to (5) of claim 37

4 for each of the set of domains.

1 43. The system of claim 42, wherein the project analysis utility, in order to move the  
 2 one or more of the set of present components into the zero or more precious components,  
 3 for each of the zero or more needed components of a particular one of the set of domains  
 4 in the domain link path, starting with that domain and traversing down the domain link  
 5 path to the lowest hierarchical level until the particular one of the zero or more needed  
 6 components is equal to a particular one of the set of present components of one of the set  
 7 of domains in the domain link path and then move the particular one of the set of present  
 8 components to the zero or more precious components of the particular one of the set of  
 9 domains.

1 44. The system of claim 43, wherein the project analysis utility removes the set of  
 2 present components by displaying the set of present components of a particular one of the  
 3 set of domains to a user of a project facility using a graphics user interface, and by  
 4 allowing the user to remove one or more of the set of present components.

1 45. A device comprising:  
 2 a medium; and  
 3 a set of instructions recorded on the medium;  
 4 wherein the set of instructions, when executed by a processor, cause the processor to:  
 5 (1) determine a set of present components assigned to a domain, each of  
 6 the set of present components includes a set of modules;

7 (2) determine a set of symbols imported by the set of modules assigned to  
8 the domain;

9 (3) determine zero or more needed components to which the domain does  
10 not have access and at least one of provides the set of symbols imported by the set of  
11 modules, and specified as required by the set of present components; and

12 (4) add the zero or more needed components into the domain.

1 46. A device comprising:

2 a medium; and

3 a set of instructions recorded on the medium;

4 wherein the set of instructions, when executed by a processor, cause the processor to:

5 (1) determine a set of present components assigned to a domain;

6 (2) determine zero or more precious components specified by a user of  
7 a project facility as not removable from the domain, each of the zero or more precious  
8 components includes a set of modules;

9 (3) determine a set of symbols imported by the set of modules in each of the zero or  
10 more precious components;

11 (4) determine zero or more needed components to which the domain  
12 does not have access and at least one of provides the set of symbols imported by the set  
13 of modules, and specified as required by the zero or more precious components;

14 (5) if one or more of the zero or more needed components is found in  
15 the set of present components, then move the one or more of the set of present  
16 components into the zero or more precious components; and

(6) remove the set of present components from the domain.

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